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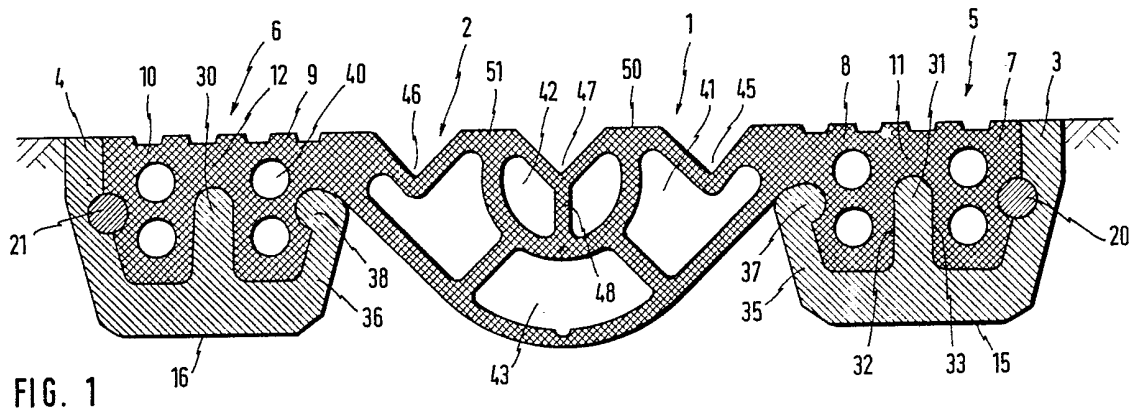
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E1D 112 F104 V2
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(56) Documents cited
GB A 2093885

(58) Field of search
E1D

(54) Expansion joint seal for bridges or similar structures

(57) The seal has a sealing body 2 flush with the top edge of the road surface and comprising beading 5,6 made of resilient rubber material inserted into recesses of open-topped sills 3 and 4. The beading 5,6 is secured against lifting out by retainer bodies 20 and 21 of circular cross-section and fitted half in the walls of the sill recesses and half in the beading 5,6. The sills 3 and 4 respectively feature webs 30 and 31, which have approximately parallel sides and which are directed towards the road surface so as to extend into the beading 5,6. The sections 7,8 and 9,10 of beading separated by the webs 30 and 31 feature concave recesses on their sides opposite the respective webs 30 and 31, and in each case the outer one of these recesses is engaged by the corresponding retainer body 20 or 21.



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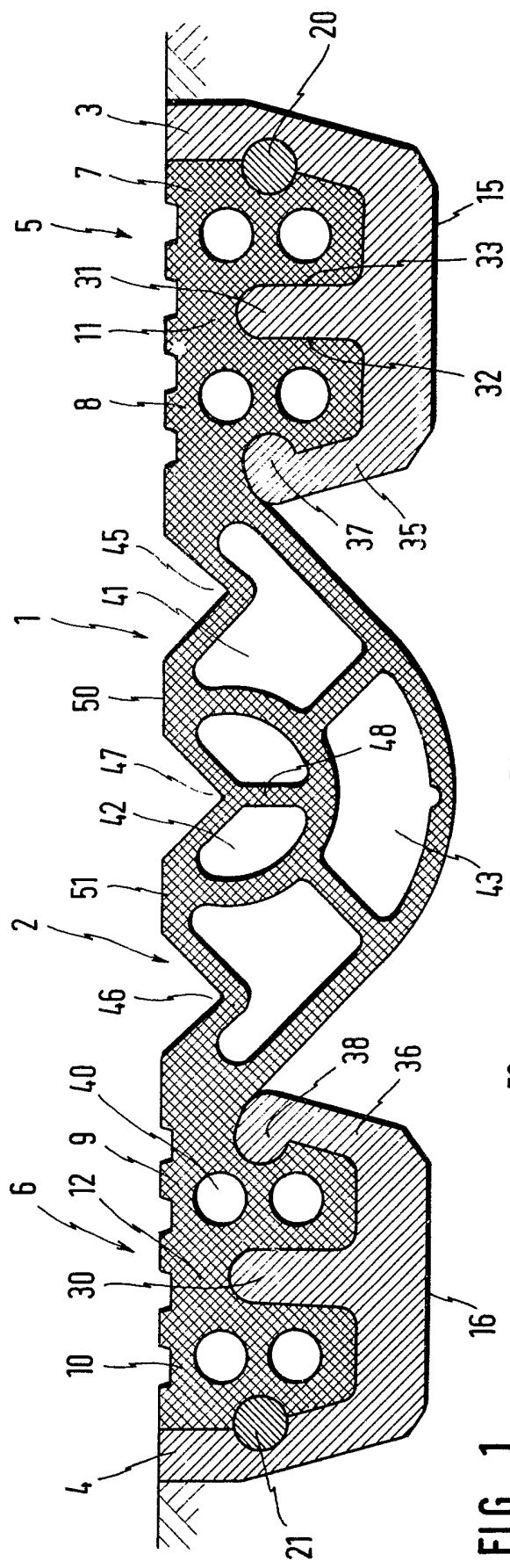


FIG. 1

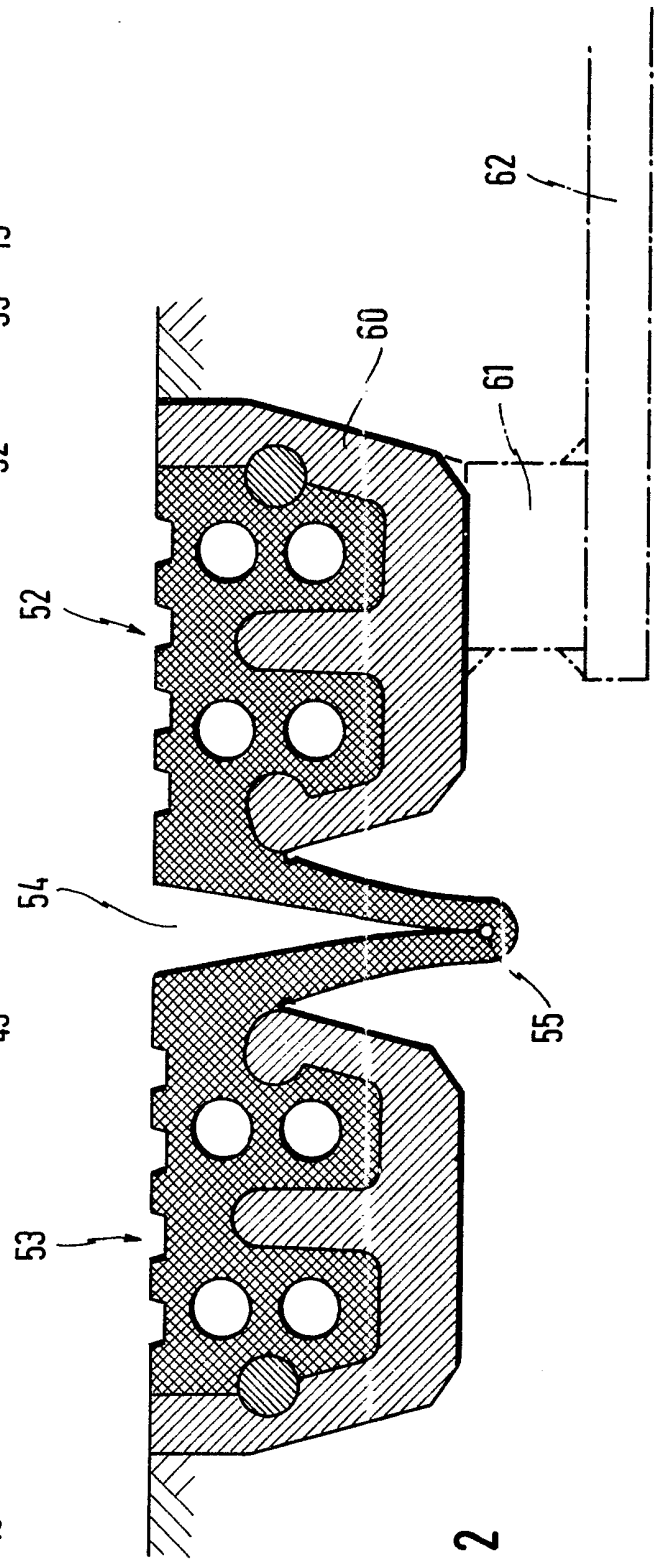


FIG. 2

SPECIFICATION

A joint spanning construction for bridges or similar structures

5 The invention relates to a joint spanning construction for bridges or similar structures with which sealing bodies made of resilient rubber material are inserted from above, in the form of beading, so
10 as to be flush with the surface of the road in recesses of sills or, should the occasion arise, in movable open-topped intermediate girders, and secured against lifting out by retainer bodies which are basically of round cross-section and fit partly in
15 a wall of the associated recess and partly in the bending.

A joint spanning construction of this type is disclosed in German Patent Specification AS 28 34 361. The sills or intermediate girders are with this
20 construction of fork-shaped design and are completely covered by the sealing bodies in each case. In order to ensure that the round retainer bodies can also be secured in their effective position during the insertion of the beading, notches are pro-
25 vided in the sealing body above the recesses in the beading so that the free edges of the sealing body where applicable can be turned back.

The fork-shaped design of the sills provides a relatively thick section in height, which is further
30 increased by the section of the sealing body lying on the ends of the free flanges. The sills of the prior art are still unsuitable, therefore, for installation in existing structures, because the relatively thick section requires extensive chiseling or chip-
35 ping out of the edges of the concrete or asphalt cement, which is not only expensive and time consuming but can lead to structural damage as well.

The object of the invention is to provide the fa-
40 cility of being able to install joint spanning constructions of the foregoing type with the least possible expense, even for retro-installation in existing structures.

This object is achieved in accordance with the in-
45 vention by the fact that the sills or intermediate girders have webs extending into the beaded section and facing towards the road surface with sides disposed approximately parallel to each other, and that the sections of beading separated by the webs
50 have concave recesses on their sides opposite the web of which the outer one, in each case, is engaged by the retainer body.

The increased width for the securing of the beadings in the sill and the decrease in thickness
55 of the sill does not only guarantee a relatively rapid and simple installation for existing structures, for example for concrete roads divided by joints, but provides for a better securing to be effected in the sills than in the case on conventional fork-
60 shaped sills.

The sills can be installed with their outer edges flush with the road surface and may have a base parallel with the road surface. The constructional depth of such types of sills can, for example, be as
65 small as 5 cm. Despite this limited depth the area

of contact and, therefore, the securing of the beading in the sills is assumed by the increased width of the securing surface.

70 It is preferable that the beading sections are provided, in each case, with at least two cavities; the latter may be round and disposed one above the other. Due to such round cavities, which can normally extend longitudinally through the entire joint spanning body is assured as the material thereof
75 permits partial displacement in the cavities during the pressing action of fitting into a sill or intermediate girder.

On driving over a joint spanning construction in accordance with the invention, it is further guaran-
80 teed that the securing engagement at the edges of the beading is only loaded, in each case, on one side by a suction action, whilst at the other side it is compressed. The web of the sill or intermediate girder also distributed the load so that lifting-out of
85 the beading is prevented, even though the top edge of the sill runs flush with the road surface and, consequently, with the top edge of the sealing body.

The thickness of the sills is preferably less than the height of the folded sealing body. With a joint closed, the sealing body is normally folded down and can provide a constructional thickness of 6 - 7
90 cm whilst the thickness of the sill, as already stated, can amount to only 5 cm for example.

95 Relatively flat sealing bodies are also revealed in German Patent Specification OS 25 16 427, which consists of U-shaped, bent-up brackets surrounding the beading, but these brackets are not designed so that they can be used as bearers on the structure.

Two embodiments of the invention which are illustrated in the accompanying drawings will now be described, by way of example. In the drawings:

105 *Figure 1* shows a longitudinal section through a joint spanning construction with the joint spanned drawn apart; and

Figure 2 shows a longitudinal section through a modified construction with the joint almost moved together.

110 A joint spanning construction 1 consists of a sealing body 2 and of sills 3 and 4.

The constructional thickness of the sills 3 and 4 amounts to 5 cm, the minimum distance between the external edges of the sills 3 and 4 for joints moved together being 19 cm, whilst the maximum distance for the joints moved apart amounts to 29
115 cm.

120 Beading 5 and 6 of the sealing body 2 has a constructional thickness of approximately 3.5 cm and is divided into equal sections 7 and 8, or 9 and 10, in the arrangement illustrated, which sections are interconnected by webs 11 or 12. The sills 3 and 4 have a flat base 15 or 16 and can therefore be placed upon a correspondingly prepared bed; it is,
125 of course, also possible (as described in detail hereinafter) to increase the constructional thickness of the sills by additional components.

The almost equal sections 7 to 10 of the beading 5 and 6 are secured in each case with respect to the sills 3 or 4 by means of circular retainer bodies
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20 or 21 on their outer sides and in concave recesses on their inner sides, the retainer bodies being retained half in the sills and half in the beading. These retainer bodies may consist of a particularly hard resilient rubber or like material or even be of metal.

The sills 3 and 4 have centre webs 30 and 31 directed towards the road surface, on either side of which the individual sections of beading are disposed. The centre webs 30 and 31 have parallel side walls 32 and 33 and a rounded free edge.

The edge 35 or 36 of each of the sills 3 and 4 overhanging towards the joint is provided with a semi-circular projection 37 and 38, which virtually acts in the same manner as the retainer bodies 20 and 21.

The beading sections in the arrangement illustrated have round through cavities 40 which are disposed one over the other in pairs in the beading sections and enable displacement of the material of the sealing body to take place during insertion thereof into the sills 3 and 4.

When the sealing body is to be inserted into the sills, the sections 8 or 9 facing the centre are initially pressed into the sills and then the two bodies 20 and 21 are pressed in.

The overhanging part of the sills 37 and 38 work as a link of the centre section of the sealing body 2, which directly bridges the joint.

The centre section of the sealing body 2 has individual hollow voids 41, 42 and 43 which lie beneath niched sections 45 and 46, whilst the niched section 47 over a vertical web 48 divides the void 42. The web 47, however, lies above the void or chamber 43. This ensures that when the joint opens and closes the sections 50 and 51 always in the place of the top of the road surface.

The same basic principle for the securing of the beading 52 and 53 has been applied in respect of the embodiment depicted in Figure 2; even the sills have the same design for the same constructional thickness. The centre part of the sealing body 54, however, can only be folded once and can span 5 mm or be increased up to 75 mm. The joint spanning construction illustrated in Figure 2 has accordingly a minimum distance, in respect of the distance between outer edges of the sills, which is 16.5 cm and a maximum distance of 23.5 cm. The folded edge 55 has a thickness of approximately 6 to 6.5 cm for joints moved together.

As indicated by chain-dotted lines in Figure 2, the right hand sills 60 lie on a steel construction, whereby the difference in height relative to a plate-shaped steel body 62 is bridged by means of struts or block-shaped parts 61. This foundation can be considered necessary if the flat sills have a limited constructional thickness (eg 5 cm) leaving a space to be filled out at the edge of the structure.

60 CLAIMS

1. A joint spanning construction for bridges or similar structures with which sealing bodies, flush with the top surface of the road and made of resilient rubber material, are inserted by means of

beading from above into recesses of sills of threshold pieces and, should the occasion arise, of movable intermediate girders, and secured against lifting out by retainer bodies which are basically of circular cross-section and fit partly in a wall of the recess and partly in the beading, wherein the sills or intermediate girders are provided with webs having sides extending substantially parallel to each other, directed towards the road surface and projecting into the beading, and the sections of beading separated by the webs are provided with concave recesses on their side opposite to the web(s), the outer of which recesses is engaged by the retainer body.

2. A joint spanning construction according to claim 1, wherein the sills terminate with their outer edges flush with the road surface and are provided with a base substantially parallel with the road.

3. A joint spanning construction according to claim 1 or claim 2, wherein said sections of beading are provided in each case with at least two cavities.

4. A joint spanning construction according to claim 3, wherein said cavities are disposed one over the other and are of circular cross-section.

5. A joint spanning construction according to any one of the preceding claims, wherein the constructional height of the sills is less than the height of the folded sealing body.

6. A joint spanning construction according to anyone of the preceding claims, wherein the beading in its effective position has surface contact with the sills throughout.

7. A joint spanning construction for bridges and similar structures, substantially as hereinbefore particularly described with reference to Figure 1 or Figure 2 of the accompanying drawings.